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EXAMINER

GRAHAM, ANDREW R

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2697

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7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/532,907

Applicant(s)

HOLMI ET AL.

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on March 21, 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6. 6) ☐ Other: \_\_\_\_

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**DETAILED ACTION**

***Information Disclosure Statement***

1. The information disclosure statements (IDS) were filed after the mailing date of the application on March 21, 2000. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

***Drawings***

2. New drawings are required in this application because the current drawings are informal, failing to meet several of the requirements of 37 CFR 1.84. Applicant is advised to employ the services of a patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 22 and 25** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out

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and distinctly claim the subject matter which applicant regards as the invention.

**Claims 22 and 25** recites the limitation "first plurality of transducers" in the respective seventh line of Claim 22 and the second and third lines of Claim 25. There is insufficient antecedent basis for this limitation in the claims.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 13-17** are rejected under 35 U.S.C. 102(b) as being anticipated by Boinais et al (FR 2768099 A1). Hereafter, "Boinais et al" will simply be referred to as "Boinais".

Boinais discloses an arrangement for equipping a vehicle seat with loudspeakers. As can be seen in Figure 1, a standard vehicle seat is shown, comprising a base (2), a back support (3), and a headrest (5). Regarding the language of Claim 13, the overall device reads on "A sitting device" and the back support (3) reads on "a back portion having an upper surface". As is also shown in Figure 1, speakers (8) are mounted in an upward facing manner on the top of the back support (3). Figure 2 illustrates the horizontal relationship

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between a user's head (6) and the two speakers (8). These speakers and their orientation read on "an electroacoustical transducer, mounted in said upper surface along an axis and oriented to radiate substantially upward from said upper surface".

Regarding **Claim 14**, the seat illustrated in the Figures of Boinais is specifically a vehicle seat (title of reference, page 1, line 1). This reads on "said sitting device is an automobile seat".

Regarding **Claim 15**, as mentioned above, Figure 1 clearly illustrates the automobile seat having a headrest (5), which reads on "said automobile seat comprises a headrest".

Regarding **Claim 16**, as is mentioned in regards to Claim 13, Figure 1 illustrates that the back support (3) of the vehicle seat includes two transducers (8). This reads on "a second electroacoustical transducer mounted in said upper surface along an axis and oriented to radiate upward from said upper surface".

Regarding **Claim 17**, Figure 2 clearly illustrates a user's head (6) being positioned between the two speakers (8), which reads on "said first transducer is positioned to the left of a user's normal head position and said second transducer is positioned to the right of said user's normal head position".

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5. **Claims 18 and 20** are rejected under 35 U.S.C. 102(b) as being anticipated by Klayman (USPN 4819269).

Klayman discloses a method for improving the perception of source imaging in a stereo loudspeaker system. Figure 8 illustrates an embodiment of the invention wherein the improvement is applied to the audio system of a vehicle interior. A plurality of passengers are shown (D,P1-P4), each of which are seated in the vehicle, wherein the overall audio system thus reads on "An automobile audio system for an automobile having a passenger compartment having a plurality of seats". The audio source applied to the audio system in Figure 8 includes a stereo source with left and right stereo channel signals, from which three other audio signals are derived, the sum and difference signals of these two channels. This audio source and the manner in which it is processed and applied to the various speakers shown in Figure 8 reads on "a first audio signal source having a plurality of output channels, said plurality of channels including a surround output channel". Each of the passengers (D,P1-P4) is exposed to a similarly positioned speaker (110,120,146) that emits one of the difference signals (col. 9, lines 4-57). These speakers read on "a plurality of substantially identical electroacoustical transducers for radiating sound waves corresponding to said surround channel". Again, as illustrated in Figure 8, each of these speakers is positioned facing the area in which each of passenger's knees are located when the passengers are in a seated position, and each of these speakers are positioned to the left of this area for each passenger. This

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reads on "wherein said plurality of electroacoustical transducers are positioned in said passenger compartment such that each of said plurality of seats are positioned substantially identically to, and in the direct field of, one of said plurality of electroacoustical transducers".

Regarding **Claim 20**, Figure 8 also illustrates a group of speakers (118,112,148) that emit the other audio difference signal from the right of each passenger (col. 9, lines 4-67). These speakers read on "a second plurality of substantially identical electroacoustical transducers. As noted previously in regards to Claim 18, the audio source includes two stereo channel signals (L,R) from which three new signals, a sum and two difference signals are derived. The different groups of speakers cited above emit the difference signals, represented as L-R and R-L. These difference signals and their original left and right channel basis signals read on "said first audio signal source comprising a left surround output channel and a right surround output channel". Figure 8 illustrates that the first cited group of speakers (110,120,146) each emit the left reverberant, or L-R, difference signal and the second group of the above cited speakers emit the right reverberant, or R-L, difference signal. This reads on "said first plurality of transducers are for radiating sound waves corresponding to signals corresponding to said left surround output channel and wherein said second plurality of transducers are for radiating signals corresponding to said right surround output channel". As discussed in Claim 18 in regards to the positioning of

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the speakers, each of the second cited above speakers of the second group are symmetrically positioned opposite of each of the speakers in the above cited first group, centered around the leg compartment areas of the front seats and back seat of the passenger compartment. This reads on each of the seats being "positioned substantially identical to, in the direct field of, one of said first plurality of electroacoustical transducers and substantially identical to, and in the direct field of, one of said second plurality of electroacoustical transducers".

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-6, 9, 12, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Boinais in view of Klayman.

As detailed above, Boinais discloses a vehicle seat with built-in, upward facing speakers. The structure of the seat reads on "a seat having a seat back" and the two speakers mounted therein read on "an electroacoustical transducer mounted in said seat back". Boinais also discloses that the audio system may be used with a hands-free telephone, radio, cassette player, or optical disc player (page 4,



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lines 16-20). The electrical connections that would have been necessary to connect these devices with the speaker arrangement of the vehicle seat read on "electronic circuitry coupling said first audio source and said electroacoustical transducer for transmitting said surround channel signal to said electroacoustical transducer".

While Boinais discloses multiple different audio sources, it is not specified:

- that one of the sources includes multiple channels, one of which is connected to the said transducer

As also detailed above, Klayman discloses a method for improving the imaging of a sound source. The audio in the system of Klayman involves sum and difference signals based on left and right audio channel signals of an audio source that are then applied to speakers specifically placed around the passengers in a vehicle. This audio source signal and the manner in which it is processed for output reads on "a first audio source having a plurality of audio channel signals, said plurality of audio channel signals including a surround channel signal".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the vehicle speaker system of Boinais to multiple seats in a vehicle and with the improved imaging circuitry of Klayman. Boinais discloses a manner for improving the sound received by a user based on the physical positioning of the speakers; Klayman discloses a manner for improving the sound received by a user based on the physical arrangement of the

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speakers as well as the processing of the audio signal. The motivation behind combining the teachings of these two references would have been the net improvement of the sound received and imaged for each individual user in the audio environment. The teachings of Klayman would have improved upon the speaker positioning of the system of Boinais, and the teachings of Boinais would have further enabled Klayman to accurately deliver sound with the proper imagery to users in each of the different sound fields.

Regarding **Claim 2**, in discussing related art, Boinais cites a British reference (GB 2102656 A) for a vehicle seat with included speakers that involves the speakers of the audio system being built into the headrest. While positioning the speakers in the headrest (5) is not preferred for the system, the teaching of this possibility reads on "said seat back comprises a headrest, and wherein said electroacoustical transducer is mounted in said headrest".

Regarding **Claim 3**, Figure 1 of Boinais illustrates that the speakers (8) in the system are arranged to project sound in an upward direction, which reads on "said electroacoustical transducer is mounted along an axis to radiate upwardly from said seat back".

Regarding **Claim 4**, Boinais clearly illustrates the use of two transducers (8) for emitting the output of the audio system (Figure 1). This reads on "a second electroacoustical transducer". As detail above in regards to Claim 1, the system of Klayman derives enhanced sum and difference signals from the input signals to establish left dominant and right dominant audio signals (col. 2, lines 57-64 and

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col. 3, lines 34-59). This reads on "said plurality of audio channels includes a right surround channel signal and a left surround channel signal". Observing the seat and vehicle interior of Figure 8 of Klayman, it can be seen that the L-R, or left reverberant signal is emitted from speakers positioned to the left of the forward facing positions of passengers in the vehicle compartment and the R-L difference signal, or right reverberant audio signal is emitted from speakers positioned to the right of the forward facing positioned of passengers in the vehicle compartment. In view of the teachings of both references and the left and right positioned speakers of Boinais, the inherent signal connections for the left and right audio signals of the left and right speakers reads on "said electronic circuitry is adapted to transmit said left surround channels signal to said first transducer and said right channel signal to said second transducer". As can be seen in Figure 2 of Boinais, each of the speakers in the vehicle seat audio system are positioned on opposite sides of a seat occupant's head position, which reads on "said first electroacoustical transducer is positioned to one side of a normal head position of an occupant of said automobile seat" and the other transducer being positioned "to an other side of said normal head position".

Regarding **Claim 5**, the sum and difference signals produced in the system of Klayman are specifically incorporated to enhance the apparent direct and reverberant sound field for the users of the audio system (col. 3, lines 16-33). The difference signals are provided by a difference circuit (14), which reads on "signal processing circuitry

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for modifying said left surround channel and said right surround channel to increase the perceived audible separation between sound radiated by said first transducer and sound radiated by said second transducer" (col. 3, lines 46-50).

Regarding **Claim 6**, the disclosure of Boinais concludes with a list of other audio devices, aside from a telephone, that may also be connected with the audio system, including a car radio, cassette player, and CD player. This reads on "a second audio source, coupled to said circuitry for transmitting audio signals from said second source to said first transducer and said second transducer".

Regarding **Claim 9**, please refer to the like teachings of Claim 6.

Regarding **Claim 12**, the title of the invention of Boinais specifically notes that the illustrated seat is the seat of a vehicle, which reads on "said seat is an automobile seat". Regarding **Claim 22**, please refer above to the like teachings of Claims 1, 4, 6, and 12.

7. **Claims 7-8, 10-11, and 23-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Boinais in view of Klayman as applied above, and further in view of Yoshino et al (USPN 4691361). Hereafter, "Yoshino et al" will simply be referred to as "Yoshino".

As detailed above, Boinais discloses a vehicle seat with built-in, upward-facing speakers. Klayman discloses a method for improving the imaging of a sound source to multiple users in multiple sound fields in the passenger compartment of a vehicle.

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Yet, Boinais in view of Klayman does not specify:

- that the first audio source is transmitted to the first and second transducers in the absence of a signal from the second audio source
- that the first audio source is muted from the first and second transducers in the presence of a signal from the second audio source

Yoshino discloses a speaker changeover device for enabling multiple audio sources to be used with the same set of output speakers. The system of Yoshino comprises a main changeover control circuit (4) which includes a ready condition monitor circuit (43) that monitors the condition of each of the input audio equipments (1a-1d) (col. 1, lines 56-65). The input status signals of the audio devices (1a-1d) are monitored in order and the changeover circuit (3) is altered to output the audio source that first sends a ready condition signal during a monitoring cycle (col. 1, lines 65-68 and col. 2, lines 1-2). Thus, while multiple audio sources may be present, only one is outputted in this arrangement, which means that the other sources are effectively muted. Yoshino lists possible input audio devices as being a car radio, a car stereo, a car television, and a personal wireless telephone (col. 1, lines 48-50). From these teachings, it would be obvious that, depending on the order of connection, that when one audio source is present, it will always be output from the system, but when two sources are present, one will always be overridden by the other. This combination of multiple input

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sources, in view of the previous teachings of Boinais in view of Klayman reads on circuitry for transmitting the left and right channel signals of the first audio source to the respective speakers "in the absence of a signal from said second source" and to mute the left and right channel signals from the first audio source "in the presence of a signal from said second source".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify the audio system of Boinais in view of Klayman by adding the speaker changeover device of Yoshino. The motivation behind such a modification would have been that multiple audio source would have been able to make use of the same set of audio speakers, which would have decreased the circuitry and potential number of audio components in the already space restricted environment of a vehicle. Boinais mentions that multiple audio sources may be used with the vehicle seat speaker system, and Yoshino discloses the particular circuitry for making use of multiple audio sources with the same speaker system possible.

Regarding **Claim 8**, the system of Boinais is specifically intended for use with hands-free telephones, which reads on "the second audio signal source is a telephone".

Regarding **Claim 10**, please refer to the like teachings of Claim 7. Regarding **Claim 11**, please refer to the like teachings of Claim 8.

Regarding **Claim 23**, please refer to the like teachings of Claim 7.

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Regarding **Claim 24**, Yoshino also discloses that the changeover system may be used to concurrently connect two different audio sources to two different output transducers (col. 3, lines 50-60). This reads on "wherein said second audio source is coupled exclusively to said one of said plurality of transducers". As can be seen in Figure 1 of Boinais, the speakers of the audio system are positioned in a seat, and Figure 8 of Klayman illustrates that the driver's seat position in the vehicle has its own set of left and right speakers. In combination, these teachings read on "wherein said one of said plurality of transducers is positioned in a driver's seat".

Regarding **Claim 25**, please refer to the like teachings of Claim 24, noting the lack of distinction in the claim language between "said plurality of transducers" and "said first plurality of transducers".

Regarding **Claim 26**, please refer to the like teachings of Claims 23 and 24.

Regarding **Claim 27**, please refer to the teachings of Klayman, which as can be seen in Figure 8, disclose multiple sets of transducers and thus reads on "a second plurality of transducers". Please also refer to the teachings of Yoshino, which disclose that all or individual speakers may be simultaneously connected to one or more audio sources, as discussed in regards to Claim 24. These teachings of Yoshino read on "said second audio signal source is coupled to one of said second plurality of transducers".

Regarding **Claim 28**, please refer to the like teachings of Claim 7.

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8. **Claims 19 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Klayman as applied to claims 18 and 20 above, and further in view of Yamada (USPN 4329544).

As detailed above, Klayman discloses a method for improving the imaging of a sound source to multiple users in multiple sound fields in the passenger compartment of a vehicle.

Klayman does not specify:

- the use of a single equalizer to couple the output transducers to the audio source

Yamada discloses the use of equalizers for each of the left and right channel speakers in the audio system of a vehicle. The system of Yamada is specifically designed to be capable of modifying the left and right channel audio signals so that the sound field would have sounded wider than the actual space inside the vehicle passenger compartment (col. 2, lines 19-23). Figure 4 of Yamada illustrates the relevant processing of the left and right channel audio signals, wherein both left and right channel signals (L,R) are passed through equalizers (10,11) before being further modified by the remainder of the system. This use of equalizers, in view of the teachings of Klayman, reads on "said plurality of electroacoustical transducers are coupled to said audio signal source by a single equalizer".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to include the equalizing and signal-processing scheme of Yamada in the audio system of Klayman. The motivation behind such a modification would have been that the signal



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processing scheme of Yamada would have been able to enhance the imaging quality of the emitted audio of the system of Klayman by electronically adjusting the audio beyond the physical limitations of the speaker positions in the system of Klayman. The signal-processing scheme of Yamada would have also been capable of adding reverberation effects to the emitted audio, which would have also improved upon the reverberation part of the audio scheme of the system of Klayman.

Regarding **Claim 21**, Yamada teaches the use of separate equalizers (10,11) for each of the audio channels in the system (col. 3, lines 46-52). This concept, in view of the teachings of Klayman, reads on "said first plurality of transducers is coupled to said audio signal source by a single equalizer and wherein said second plurality of electroacoustical transducers are coupled to said audio signal source by a single equalizer".

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

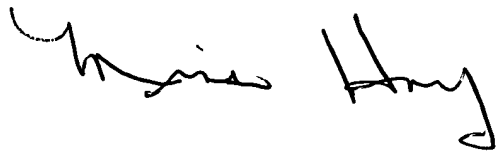
Attig (EP 451369 A1) discloses a system for automatically muting a sound system in a vehicle when an incoming telephone call is detected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is (703) 308-6729. The examiner can normally be reached on Monday-Friday (7:30-4:30), excluding alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen, can be reached at (703) 305-4386. The fax number for the organization where this application or proceeding is assigned is 703-872-9314 for regular communications, and 703-872-9315 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Andrew Graham  
Examiner  
A.U. 2697

**MINSUN OH HARVEY  
PRIMARY EXAMINER**



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September 22, 2003